

Role of Placental Cord Drainage in the Management of Third Stage of Labor after Normal Delivery

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ABSTRACT

Background: Globally and especially in the under developing nations Postpartum Hemorrhage (PPH) is the most common cause of maternal mortality. All women who deliver are at risk of complications of third stage of labor. Multiple researches have been done to compare active vs expectant management of third stage of labor. Placental Cord Drainage (PCD), one of the active method for control of third stage of labor, includes opening of clamp from mother's side of umbilical cord thereby allowing the blood from placenta to flow freely immediately after clamping and cutting of the umbilical cord. Aim: Thus, the following study was conducted to assess the effect of PCD via umbilical cord in decreasing the time period of third stage of labor and incidence of PPH. **Materials and Methods:** This hospital based comparative study was conducted in the department of Obstetrics and Gynecology, National Institute of Medical Sciences & Research, Jaipur. A total of 300 consecutive patients with term pregnancy (>37 weeks) fulfilling the inclusion criteria were taken after informed consent. These were divided into two groups of 150 cases each, study group (PCD group) and control group. The various parameters like blood loss, need for transfusion, duration of third stage of labor, manual removal of placenta, hospital stay, secondary PPH (after 24 hours and before 6 weeks) were noted for every female. Statistical analysis was done using t-test for quantitative data, nonparametric data was analyzed by Mann Whitney test and categorical data was analyzed using chi-square test. The significance threshold of p-value was set at <0.05. All analysis was carried out by using SPSS software version 21. **Results:** Average blood loss was significantly less in subjects of drainage group as compared to control group (273.8 ml vs 391.2 ml; p<0.05). Also, average duration of third stage of labor was significantly less in drainage group (4.1 vs 7.7 mins; p<0.05). No difference was observed between two groups based on placenta weight (p=0.121). **Conclusion:** In the present study, PCD had a beneficial effect on the duration of third stage of labor and on postpartum blood loss. Thus, use of PCD is recommended in active management of labor by trained professionals.

Keywords: PPH (post-partum hemorrhage), PCD (Placental cord drainage).

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INTRODUCTION

The 3rd stage of labor starts with the delivery of the baby and ends with the completed delivery of the placenta and its attached membranes. The most feared complication of third stage of labor is PPH.^[1] PPH occurs in 5 percent of all deliveries and is responsible for a major part of maternal mortality. According to WHO, 25% of all maternal deaths are caused by PPH. Complication rates are increased markedly due to prolongation of third stage of labor.^[2,3]

Active management of third stage of labor is preferred than expected management. WHO recommendations have supported active

management of third stage of labor as a critical intervention for PPH prevention. Management of third stage of labor includes oxytocin drugs, advanced cord clamping (prior to cessation of cord pulsation) or controlled cord traction. However, controlled cord traction may cause uneasiness to patient and training of midwives is necessary to carry out controlled cord traction.^[4]

Placental Cord Drainage is known as opening of the clamp from mother's end of the umbilical cord connected to the baby. Thereby, allowing the blood-free placenta to flow freely into a container immediately after clamping and cutting of the cord. Ramkhah et al in 1999 first observed that placental cord drainage can decrease time of third stage of labor.^[5] A Cochrane review in 2011 stated that placental cord drainage implementation caused 77 ml reduction in loss of blood and third stage of labor is reduced by 3 minutes.^[6] Roy et al found in his study that third stage of labor time and amount of blood loss both were decreased by placental cord drainage. While in 2015, Amorium et al concluded

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that the placental cord drainage has no effect on reduction of either duration of third stage of labor or blood loss.^[7]

Therefore, the study was done with the aim to assess the effect of drainage of placental cord via umbilical cord in reducing time period of third stage of labor and incidence of PPH.

MATERIALS & METHODS

This hospital-based study was conducted between Jan 2017 to June 2018 in the Department of Obstetrics and Gynecology, National Institute of Medical Sciences and Research, Jaipur after approval of institutional ethical committee. Women 18-45 years of age with a term pregnancy (> 37 weeks) and a single live fetus in cephalic presentation expected to deliver vaginally were included in the study after taking consent. Women with coagulation defects, signs of early PPH, suspected placental abruption, multiple gestation and women with medical disorders were excluded from the study. A total 300 consecutive patients fulfilling inclusion criteria were taken and randomized into two groups by odd even method. Each group comprised of 150 patients (study group and control group).

In the study group, the placental end of the cut umbilical cord was first clamped till cord cutting and then unclamped and left open to drain blood in a vessel until the flow ceased. Mixing of drained blood with the blood loss in the third stage was prevented by this method. In the control group the placental end of the cut umbilical cord was kept clamped.

Placenta was delivered by control cord traction once signs of placental separation were seen. Intramuscular oxytocin (10 IU) was given after delivery of placenta in both groups. The duration of third stage was calculated using a stopwatch. The pulse rate, blood pressure and state of uterus was noted immediately. Blood lost in the third stage of the labor was measured by collecting the blood in a disposable conical measuring bag (Brass V drape). The women were kept under observation for next 1 hour for any complications like blood loss, need for any transfusions, duration of 3rd stage, manual removal of placenta, hospital stay, hemoglobin and hematocrit in anti-partum and post-partum period, secondary PPH (between 24 hrs. to 6 weeks of delivery)

Statistical Analysis

The quantitative data was represented as their mean \pm SD. Categorical and nominal data was expressed in percentage. The t-test was used for analyzing quantitative data or else nonparametric data was analyzed by Mann Whitney test and categorical data was analyzed by using Chi Square test. The significance threshold of the p-value was set at <0.05 . All analysis was carried out by using SPSS (Software version 21).

RESULTS

Table 1: Comparison of Blood Loss Between Study Groups

Blood Loss (ml)	Group		Total
	PCD	Control	
<200	126	102	228
	84.0%	68.0%	76.0%
200-500	22	44	66
	14.7%	29.3%	22.0%
>500	2	4	6
	1.3%	2.7%	2.0%
Total	150	150	300
	100.0%	100.0%	100.0%

p-value < 0.05

Out of 150 subjects, 84 % in drainage group and 68% in control group had blood loss less than 200 ml. Blood loss greater than 500 ml was observed in 1.3 % and 2.7 % cases of drainage and control group respectively (p<0.05).

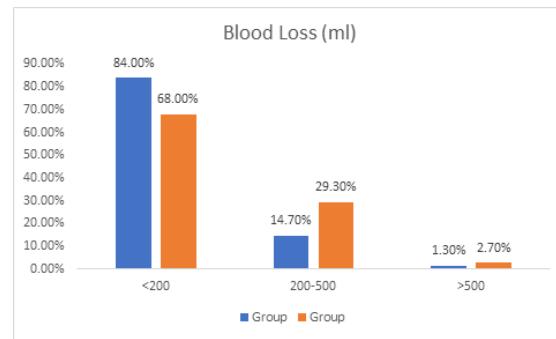


Figure 1: Comparison of blood loss between study groups

Table 2: Comparison of Duration Of 3rd Stage of Labor Between Study Groups

Duration of 3rd stage (min.)	Group		Total
	PCD	Control	
<10	15	3	18
	10.00%	2.00%	6.00%
10 – 30	134	138	272
	89.30%	92.00%	90.70%
>30	1	9	10
	0.70%	6.00%	3.30%
Total	150	150	300
	100.00%	100.00%	100.00%

p-value < 0.05

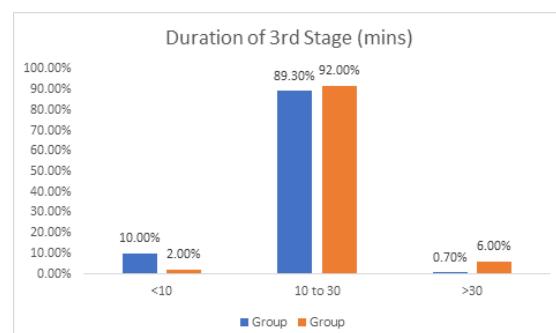


Figure 2: Comparison of duration of 3rd stage of labor between study groups

Out of 150 subjects, 89.3 % in drainage group and 92 % in control group had third stage of labor between 10-30 mins. Duration of third stage of labor more than 30 mins was observed in 0.7% and 6% subjects while below 10 minutes was observed in 10 % and 2 % subjects of drainage and control group respectively ($p<0.05$).

Table 3: Comparison of Mean Blood Loss, Placenta Weight and Duration of 3rd Stage of Labour Between Study Groups

Variables	Group	Mean	SD	p-value
Blood Loss (ml)	PCD	273.8	112.3	<0.05
	Control	391.2	156.7	
Placenta Weight (gms)	PCD	660.0	130.4	0.121
	Control	672.0	133.3	
Duration of 3rd stage (mins)	PCD	4.1	1.8	<0.05
	Control	7.7	2.9	

Mean blood loss was significantly less in subjects of drainage group as compared to control group (273.8 ml vs 391.2 ml; $p<0.05$). Also, mean duration of third stage of labor was significantly less in drainage group (4.1 vs 7.7 mins; $p<0.05$). No difference was observed between 2 groups based on placental weight ($p=0.121$).

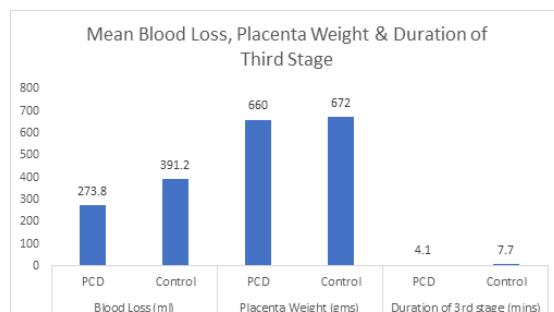


Figure 3: Comparison of mean blood loss, placental weight, and duration of 3rd stage of labor between study groups

DISCUSSION

In the present research, three fourth of the subjects were between 21-25 years of age ($p=0.53$). No difference was observed between two groups with respect to age, parity, gestation age, duration of second stage of labor and type of delivery. Also, no difference was observed between two groups, based on birth weight and APGAR score at 5 minutes ($p>0.05$).

Out of 150 subjects, 89.3 % in drainage group and 92% in control group had duration of third stage of labor between 10-30 minutes. Duration of third stage of labor more than 30 minutes was observed in .7% and 6% and less than 10 minutes was observed in 10% and 2% subjects of drainage and control group respectively ($p<0.05$). Mean duration of third stage of labor was significantly less in drainage group (4.1 v/s 7.7 mins, $p<0.05$). This study goes with

Cochrane review, Beagley et al,^[8] and Jongkolsiri P et al.^[9] Wu HL et al in their analysis on 2653 patients established that the third stage of labor duration was decreased by 2.28 minutes even though blood loss was equal.

In 150 cases, 84% in drainage group and 68% in control group the blood loss was less than 200 ml. Blood loss of greater than 500 ml was observed in 1.3% and 2.7% subjects of drainage and control group respectively ($p<0.05$). This study goes with Cochrane review, and Shravage JC et al.^[10] Ascioglu et al,^[11] analyzed that by drainage of placental cord blood loss was significantly low (207 vs 277 ml, $p<0.001$).

In the present study, incidence of PPH was observed as 1.3 % and 2.7% in drainage and control group respectively. The difference was statically not significant ($p=0.68$). Gulati N et al,^[12] observed incidence of PPH as 6% and 12% in drainage and control group respectively. Shravage JC et al^[13] observed incidence of PPH in drainage group and control group as 3% and 10% respectively.

Oxytocin requirement of more than 10 IU after placenta expulsion was observed in 2% drainage group and 7.3% in expectant group. The difference was, however, statistically not significant. Average blood loss was significantly less in subjects of drainage group as compared to control group (273.8 ml vs 391.2 ml, $p<0.05$). Also, average duration of third stage of labor was significantly less in drainage group (4.41 vs 7.7 minutes, $p<0.05$). No difference was observed between two groups based on placental weight ($p=0.121$).

CONCLUSION

Based on the present study, the following inferences were arrived at:

1. Drainage of placental cord had a beneficial effect on the duration of third stage of labor and on postpartum blood loss.
2. Thus, the placental cord drainage is an effective method in the management of third stage of labor.
3. Usage of cord drainage in all deliveries by professionals is recommended.

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